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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/614,342

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Shinichi Nagahama

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01/18/2005

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EXAMINER

ECKERT II, GEORGE C

ART UNIT

PAPER NUMBER

2815

DATE MAILED: 01/18/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/614,342

Applicant(s)

NAGAHAMA ET AL.

Examiner

George C. Eckert II

Art Unit

2815

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 25 September 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-32 is/are pending in the application.
- 4a) Of the above claim(s) 1-16 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 17-23 26-29 32 is/are rejected.
- 7) ☒ Claim(s) 24,25,30 and 31 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 08 July 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
 - 2) ☐ Certified copies of the priority documents have been received in Application No. _____.
 - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 9/25/03.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Claims 1-16 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim.

Election was made **without** traverse in the reply filed on October 7, 2004.

Priority

2. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Specification

3. The disclosure is objected to because of the following informalities: the specification contains several typographical and/or grammatical errors. For example:

- a. Beginning on page 29, paragraph 0072, every time the word eutectic is used throughout the specification, it is written twice; "eutecticeutectic."
- b. P. 37, paragraph 0087, "not higher than 0.01."
- c. P. 38, paragraph 0088, "or thinner).,"
- d. P. 42, paragraph 0097, "the bad gap energy"
- e. P. 53, paragraph 0123, "the device is significantly widen"

Appropriate correction is required.

4. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 20, 25 and 31 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Regarding claim 20, it is not clear what is meant by the phrase “with no solid solubility or low solid solubility each other” as recited in claim 20. Regarding claims 25 and 31, the limitation “said p-electrode” lacks antecedent basis.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

6. Claims 17, 18, 23, 27 and 29 are rejected under 35 U.S.C. §102(e) as being anticipated by 6,455,340 to Chua et al. Chua teaches in figure 3 a nitride device comprising:
- a conductive substrate 128 (formed of copper, col. 5, lines 65-67) having two opposed main faces and a thermal expansion coefficient higher than that of a nitride semiconductor (inherent);

a bonding layer 130 (see fig. 3) on a main face of the substrate and including a eutectic layer (Chua teaches bonding layer 130 may comprise solder which is a eutectic; alternatively, gold layer 124 may be considered part of the bonding layer which would form a eutectic with the adhesive 130);

one or more p-type nitride semiconductor layers 116-120 placed on the bonding layer which includes layer 118 comprising AlGa_N (col. 5, line 38);

an active layer including two layers of AlInGa_N and placed on the p-type nitride layers (Chua teaches that active layer 114 may comprise multiple well layers separated by barrier layers (col. 5, lines 25-31) and teaches that the material of the active region may be AlInGa_N (col. 1, lines 59-67);

one or more n-type nitride semiconductor layers containing Al 108-112 placed on the active layer.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 19-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chua et al as applied above in view of 5,599,403 to Kariya et al. Chua taught the device of claim 17 including a substrate formed of metal but did not expressly disclose that the substrate was formed of two metals or a metal and a ceramic. Kariya teaches a photoelectric device (e.g.

photodiode) comprising a substrate which may be formed of a conductive material on a supporting material that is either conductive or insulating. The conductive materials include Al, Cr, Mo, Au etc. and the insulating materials include ceramics (col. 12, line 60 to col. 13, line 4). It is considered obvious at the time of the invention to form the device of Chua using the alternative materials of Kariya as they allow both flexible and mechanically strong substrates (col. 13, lines 29-37).

8. Claims 22 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chua et al. Chua taught the device of claims 17 and 27 including that the n-type nitride layers included an n-type clad layer 110 and an n-type contact layer 108, but did not expressly disclose that the two n-type layers were doped as instantly claimed (that the contact layer had a higher doping than the other layer). However, it is considered well known in the art that a contact layer is typically more highly doped than other layers because such high doping ensures an ohmic contact between the n-type layer and the metal electrode (here 146) placed on the contact layer. As such, the instant limitations are considered obvious over Chua et al.

9. Claims 26 and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chua et al in view of 6,692,136 to Marshall et al. Chua taught the device of claims 17 and 27 but did not disclose the device further comprising a phosphor layer. Marshall teaches that it is well known to include a phosphor layer in a blue-light LED (Chua's is a blue light LED). Marshall motivates using a phosphor layer in that it produces white light, which, as is known in the art, may be used in various lighting systems such as LCD backlights.

Allowable Subject Matter

10. Claims 24, 25, 30 and 31 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.


Conclusion

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The additional cited art teaches similar structures to those instantly claimed.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to George C. Eckert II whose telephone number is (571) 272-1728.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tom Thomas can be reached on (571) 272-1664. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


GEORGE ECKERT
PRIMARY EXAMINER